

**XV.—Report upon a Collection of Hippoboscidae (Diptera Pupipara) from Borneo.** By G. F. FERRIS, Stanford University, California.

(With one Plate.)

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Through the kindness of Dr. Eric Mjöberg I have been enabled to examine a small collection of Hippoboscidae from Borneo, which is herewith reported upon. The holotypes of the new species described are returned to Dr. Mjöberg for deposit in the Sarawak Museum. Paratypes are retained for the Stanford University collection. Other material is distributed as indicated in connection with the lists of specimens examined.

The lands bordering upon the Indian Ocean are extremely rich in representatives of the three families of the Diptera Pupipara, in fact a majority of all the known species are from this great area. Undoubtedly also there remain many more species still to be discovered. Unfortunately, however, the descriptions of species in this group are in large measure very unsatisfactory and relatively few of the described forms can be recognized with any degree of definiteness from the literature.

The student in this group is therefore confronted with on the one hand the alternative of tentatively identifying material with named forms largely on a basis of probabilities or on the other of naming almost everything as new with the possibility of adding to the synonymy. As has been pointed out in another paper<sup>(1)</sup> this condition arises in part from the methods that have usually been employed in the study of these insects,

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<sup>(1)</sup> Ferris, G. F., and Cole, F. R. *A Contribution to the Knowledge of the Hippoboscidae*. Parasitology 14; 178--205, 1922.

dry, pinned specimens being unsuitable because of the shrinking of the soft bodies. I need not again enlarge upon the methods which I consider should be followed, other than to say that for my own work I employ specimens which have been mounted on slides after suitable preparation.

Of the two alternatives indicated above I have chosen the second, but in case a species may with reasonable certainty be referred to a named form I have done so. Where any considerable doubt exists I have not hesitated to describe species as new. One unfortunate feature of most of the systematic work on this group is the almost complete lack of figures. Because of this I am presenting figures wherever anything at all is to be gained by doing so. It is my hope that the species here dealt with may be readily recognizable from the descriptions and figures given.

#### GENUS ORNITHOICA Rondani.

Hippoboscidae with functional and non-caducous wings in which there are seven veins behind the costa and three cross-veins, the third vein (R4+5) approximate to (usually said to be confluent with) the second vein (R2+3) for a considerable portion of its length; ocelli present; claws two-toothed.

Several species, most of which are from the Eastern Hemisphere, have been referred to this genus, but the status of most of them is very dubious. I am, however, referring the single specimen in the collection at hand to a named species for, as far as may be judged from the literature, it in all probability belongs to this.

ORNITHOCIRA BECCARIINA Rondani. (Plate 11, fig. 1; text, fig. 1.)

*Specimens Examined.* A single female from *Cissa jeffreyi*, Mt. Murud. This specimen is returned to the Sarawak Museum.

*Notes.* The more distinctive features of this species are as follows. Length (on slide) 3 mm., length of head and thorax 1.75 mm. General color dark brown. Abdomen with but three transverse plates on the dorsum in addition to the basal plate and the paired apical plates, differing in this respect from *O. promiscua* Ferris and Cole and *O. turdi* Latr. which have four plates. Ventral side of the abdomen without a cluster of chitinous, seta-bearing tubercles at the margin near the base

and the apex as in *O. promiscua*. Legs with a conspicuous pale ring at about the middle of the tibia, this being much more marked than in *O. promiscua*. Posterior tibia with a small, but distinct chitinous spur at the inner apical angle text (fig. 1c), a structure that is not present in *O. promiscua*, at least.

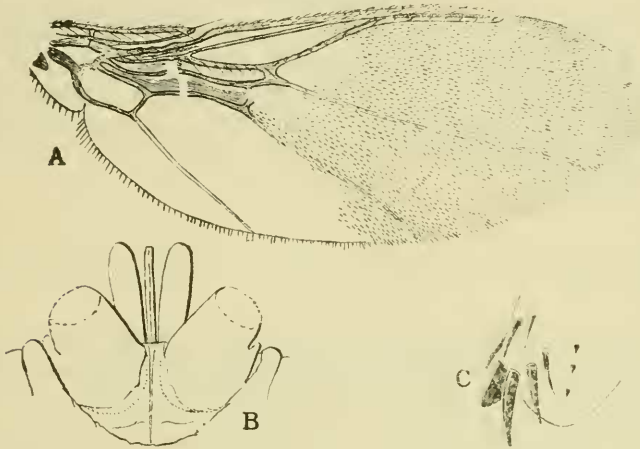


Fig. 1. *Ornithoica beccariina* Rondani. A wing; B clypeal region of head; C spur at apex of posterior tibia.

Recent authors have considered that this species should be placed as a synonym of *O. confluenta* Say, but there is no justification for this as *confluenta* is not recognizable from the original description.

#### GENUS ORNITHOPHILA Rondani.

Hippoboscidae with functional and non-caducous wings which have seven veins behind the costa and but two cross veins; claws three-toothed; ocelli present; antennae small and short; clypeal region (in the one species where this structure is described) projecting on each side like a horn beyond the apex of the antenna; abdomen with a finely striate median dorsal region.

This genus is based upon *O. vagans* Rondani which was described in 1879 from a single specimen taken in Italy. One other species, *Ornithomyia simplex* Walker, was referred to

this genus by Austen in 1903. Neither of the species is recognizable from the descriptions. I have consequently described as new under the name of *O. makilingensis* a species that I have received from the Philippine Islands and the description of this species is now in press in the Philippine Journal of Science. This species is represented in the material at hand.

I may here call attention to a possible connection between this genus and the genus *Icosta* Speiser. The latter was based chiefly upon the peculiar character of the clypeal region, which is identical with the condition found in *O. makilingensis*. The genus differs from *Ornithophila* in the supposed absence of ocelli but I am not able to avoid the suspicion that the two may be identical.

*ORNITHOPHILA MAKILINGENSIS* Ferris. (Plate 11, fig. 3; text, fig. 2.)

*Specimens Examined.* One male and one female from *Haematortyx sanguiniceps*, Mt. Murud. The male is retained; the female is returned to the Sarawak Museum.

*Notes.* This species was described from a single female from the Philippine Islands and the description is in press at the time of the present writing. This specimen is a female in which the abdomen was not fully expanded; consequently there are certain differences between it and the specimens listed here which will be noted. The specimen having been returned is not available for comparison but I feel no doubt as to the identification.

In the original description no mention was made of the presence of a small, chitinized plate on the dorsum of the abdomen just caudad of the basal plate. Such a plate is present in the female from Borneo and was probably merely retracted beneath the basal plate in the Philippine specimen.

The length of the specimens at hand is 5 mm. for the female and 4.5 for the male (on the slide); general color, after mounting, a light brown. The male is here figured (Plate 11, fig. 3). It differs from the female but little, the abdomen being less rotund and the external genitalia being represented by a pair of small protuberances which are the vestiges of the claspers. It is not possible on the basis of this specimen to give any discussion of the internal genitalia. The wing (text

fig. 2a) is entirely covered with minute setulæ (not shown in the figure) except for a narrow marginal area behind the anal

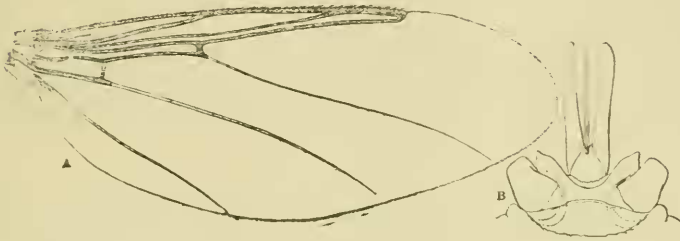


Fig. 2. *Ornithophila makilingensis* Ferris. A wing (vestiture of setulæ not shown); B clypeal region.

vein. The veins are entirely bare except for numerous small setæ along the entire length of the costa.

#### GENUS ORNITHOCTONA Speiser.

Hippoboscidae with functional and non-caducous wings which have seven veins behind the costa and three cross veins; claws three-toothed; first segment of the posterior tarsi with a distinct transverse comb of setae on the plantar surface at the base; ocelli present; antennae very large and broad, flattened, nearly parallel, slightly exceeding the palpi in length.

This is a rather large genus, containing about twenty names, but almost none of the species are recognizable from the existing descriptions. A number of the species are from the Indian Ocean region and possibly the two here described are synonyms of some of these.

I wish here to call attention to the most distinctive character of the genus, the transverse comb of setae on the plantar surface of the first segment of the posterior tarsi. This is a character that has not been observed previously and that is not mentioned in any descriptions of the genus.

ORNITHOCTONA SOROR n. sp. (Plate 11, fig. 2a--d, fig. 4.)

*Specimens Examined.* Two females from *Buchanga stigmatops*, Mt. Murud.

*Female.* (Plate 11, fig. 4.) Length (on slide) 6.5 mm., length of head and thorax 3.5 mm. General color (on slide) a pale brown.

*Head* slightly wider than long, almost destitute of setae above. Antennae (Plate 11, fig. 2c) about half as long as the head, margined with many slender setae, the apex blunt and but slightly constricted.

*Thorax* with the disc entirely bare; humeral angles strongly and acutely produced, bearing numerous quite long, slender setae; lateral margin before the base of the wing with numerous setae of various lengths; mesonotum with a single very long seta near the base of the wing; scutellum with four apical setae and margined with a few fine setae. Ventral side bare except for small setae about the mesocoxal cavity; sternum produced anteriorly into two acute processes (Plate 9, fig. 2d) between the anterior coxae.

*Legs* apparently with no specifically distinctive characters except the absence of a lamellate process at the apex of the anterior tibiae.

*Wings* (Plate 11, 2a) light brown in color, the veins quite dark; setulae few, arranged in faint, irregular patches toward the apex of the wing, as indicated in the figure; veins entirely destitute of setae except for the basal portion of the coxa which bears a number of long setae, the remainder of its length beset with small setae.

*Abdomen* membranous throughout except for a narrow basal segment on the dorsal side; three small median dorsal sclerites, a pair of small subapical dorsal sclerites and a small basal ventral sclerite. The basal segment on the dorsal side is beset with numerous setae which become quite long at the lateral margins; remainder of the dorsum except the plates and the apex thickly and uniformly beset with small, slender setae, which are not borne upon chitinized prominences. Basal plate on the ventral side with numerous small, stout setae, the remainder of the ventral aspect beset with small setae as is the dorsum, those about the genital opening being long and slender.

*Notes.* This species is extremely close to *O. strigilecula* Ferris from South America. I have compared the specimens directly with the type of the latter species and the only really significant differences that I have found are as follows. The antennae in *O. soror* are noticeably blunter than in the other, the processes of the mesosternum sharper and longer, the setae of the abdomen noticeably more numerous and more slender. When more is known as to the distribution of these forms it may very well prove that they should merely be regarded as sub-species of the same thing.

ORNITHOCTONA MAGNA n. sp. (Plate 11, fig. e--h.)

*Specimens Examined.* Ten females and three males from the Kalabit district on *Spilopelia tigrina*. Holotype, a female, paratype females and one paratype male returned to the Sarawak Museum. Remainder retained in the Stanford Collection.

*Female.* Length on slide 12 mm.; length of head and thorax, 6 mm. In alcoholic specimens the head and thorax above are very dark brown except for the frontal vitta of the head and the humeral regions of the thorax which are pale; entire underside of head and thorax pale and legs pale at base of femur; remainder of legs almost black; abdomen grey.

In general characters very closely approaching the preceding species, the description and figure of chaetotaxy of head and thorax applying almost equally well to either. There is a slight tendency toward a greater number of setae than in *O. soror*, the scutellum of *O. magna* bearing as many as eight long setae instead of four.

*Antennae* (Plate 11, fig. 2g) noticeably more slender and more constricted toward the apex than in *O. soror*. *Thorax* with the anterior processes of the mesosternum (fig. 2h) short and broad. *Legs* with a pronounced lamellate process at the apex of the anterior tibiae (fig. 2f) which is absent in *O. soror*.

*Abdomen* entirely devoid of chitinous plates, except for the basal plate both dorsally and ventrally as in *O. soror*; completely covered, except for the apical region, with small setae which are set on minute, chitinous prominences; position of the paired apical plates in *O. soror* marked by a cluster of 3--5 long setae. Ventral side with long setae surrounding the genital region as in *O. soror*.

*Male.* Length (on slide) 8.5 mm. General form and characters of head and thorax as in the female *except that the lamellate process of the anterior tibiae is lacking.*

*Abdomen* (fig. 2e) differing from that of the female in the presence of well-marked dorsal plates, there being two large median plates, succeeding these a broad plate which extends entirely across the abdomen and succeeding this a pair of small plates which extend partially to the ventral side. Ventral side as in the female, there being no vestiges of claspers. Internal genitalia small.

*Notes.* As compared with *O. soror* this is a very strongly-marked form, the comparatively huge size, the absence of abdominal plates in the female and the other characters given distinguishing it at once.

#### *Explanation of Plate 11.*

- Fig. 1. *Ornithoica beccariina* Rondani. Female, wings removed.  
 ,, 2. *Ornithoictona soror* new species. A wing; B first segment of posterior tarsus; C clypeal region; D processes of mesosternum. *Ornithoictona magna* new species; E abdomen of male; F lamellate process at apex of anterior tibia of female; G clypeal region; H processes of mesosternum.  
 ,, 3. *Ornithophila makilingensis* Ferris. Male, wings removed.  
 ,, 4. *Ornithoictona soror* new species. Female, wings removed.



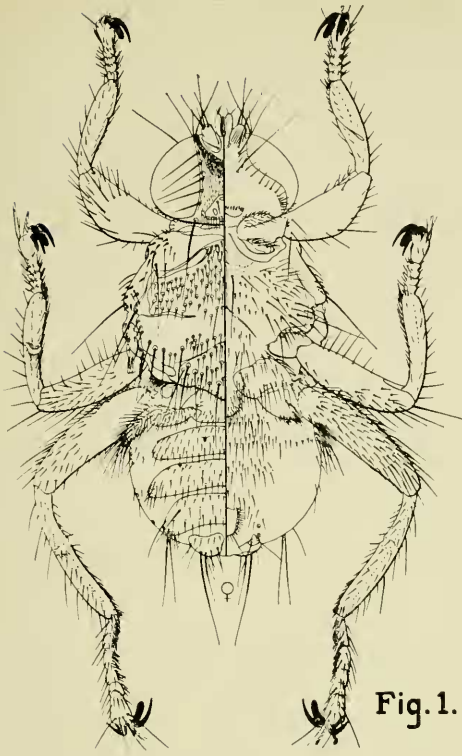


Fig. 1.

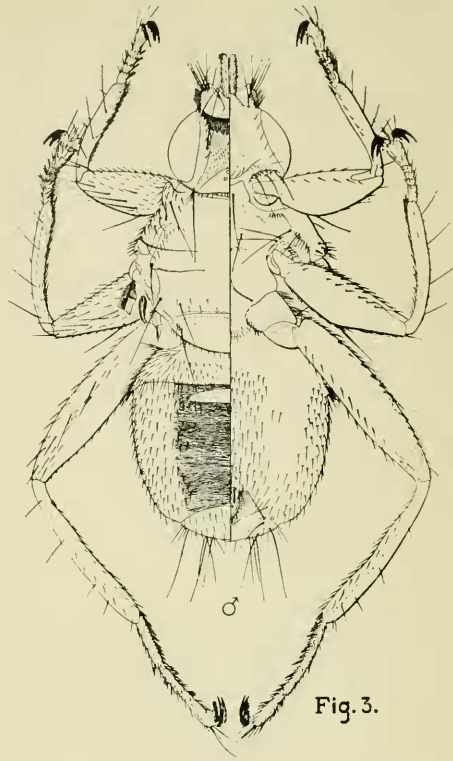


Fig. 3.

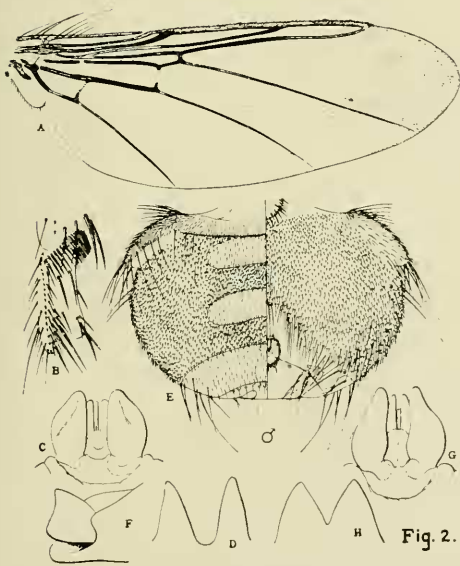


Fig. 2.

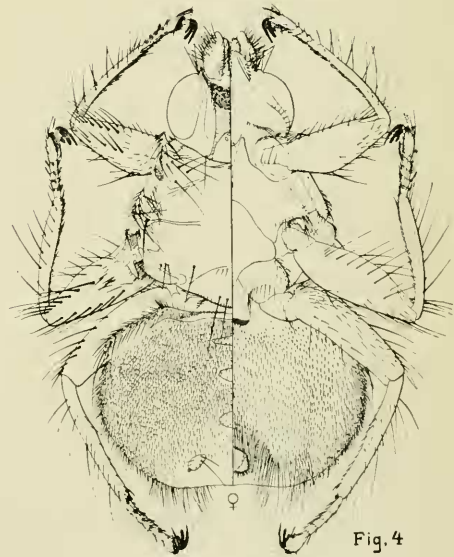


Fig. 4.